

NOMENCLATRURAL COMBINATIONS IN POACEAE AND CYPERACEAE

Joseph K. Wipff & Stanley D. Jones

Herbarium (BRCH), Botanical Research Center, P.O. Box 6717, Bryan,
Texas 77805-6717 U.S.A.

ABSTRACT

The following nomenclatural changes in Poaceae and Cyperaceae are proposed: *Chasmanthium laxum* var. *sessiliflorum* (J. Poiret) *comb. et stat. nov.*; *Panicum aciculare* var. *angustifolium* (S. Elliott) *comb. nov.*; *Panicum acuminatum* var. *consanguineum* (C. Kunth) *comb. nov.*; *Panicum dichotomum* var. *unciphyllum* (C. Trinius) *comb. nov.*; *Panicum ensifolium* var. *breve* (A. Hitchcock & M.A. Chase) *comb. nov.*; *Panicum sphaerocarpon* var. *isophyllum* (Lamson-Scribner) *comb. nov.*; *Stipa perplexa* (P. Hoge & M. Barkworth) *comb. nov.*; *Paspalum repens* var. *fluitans* (S. Elliott) *comb. et stat. nov.*; and *Cyperus squarrosus* var. *runyonii* (H. O'Neill) *comb. nov.*

KEY WORDS: *Achnatherum*, *Chasmanthium*, Cyperaceae, *Cyperus*, *Dichantherium*, nomenclature, *Panicum*, *Paspalum*, Poaceae, *Stipa*

Chasmanthium laxum (L.) H. Yates var. *sessiliflorum* (J. Poiret) J. Wipff & S.D. Jones, *comb. et stat. nov.* BASIONYM: *Uniola sessiliflora* J. Poiret in J. Lamarck, *Encycl.* 8:185. 1808. *Poa sessiliflora* (J. Poiret) C. Kunth, *Révis. Gramin.* 1:111. 1829. *Chasmanthium sessiliflorum* (J. Poiret) H. Yates, *Southw. Naturalist* 11:426. 1966. *Chasmanthium laxum* (L.) H. Yates subsp. *sessiliflorum* (J. Poiret) L.G. Clark, *Ann. Missouri Bot. Gard.* 77:601. 1990. TYPE: "Cette plante n'a été communiquée par M. Bosc, qui l'a recueillie dans la Caroline" (HOLOTYPE: P; Isotype: US).

Yates (1966) treated *Chasmanthium laxum* (L.) H. Yates and *C. sessiliflorum* (J. Poiret) H. Yates as distinct species, but reported that they are

sympatric throughout the southeastern United States and together often constitute the dominant floor cover in woodlands of the Coastal Plain. Larry E. Brown [(SBSC), pers. comm.] stated that in the Davis Hill State Park, Liberty County, Texas, *C. laxum* var. *sessiliflorum* is found on sandy soil of the pine-oak salt dome while *C. laxum* var. *laxum* is present on clay soil under hardwoods in the Trinity River bottomland. His observations show ecological allopatry, at least in this instance. However, our field work throughout the southeastern U.S. coupled with extensive herbarium work does not support ecological separation across their range. These species are closely related morphologically, have the same chromosome number ($2n = 24$) and flower over the same general period in a given area. Clark (1990) also reported that the two taxa were very similar morphologically and showed significant overlap in the following quantitative characters: leaf length and width; panicle length; number of florets per spikelet; and spikelet length and width. Yates (1966) and Clark (1990) both reported that the only differences between the two taxa are the pubescent leaf collars and Clark (1990) also reported the more or less divergent panicle branches of *C. sessiliflorum*. *Chasmanthium laxum* has glabrous leaf collars and appressed panicle branches. We agree with Clark (1990) that these two taxa are conspecific, but do not believe that collar vestiture and panicle branch position warrant the recognition of these taxa at the subspecific rank. In our opinion, for the rank of subspecies, a taxon should be allopatric, either geographically and/or ecologically coupled with significant morphological differences. Clearly these taxa do not meet these criteria. The data do, however, justify recognition at the varietal rank.

Panicum aciculare N. Desvaux ex J. Poiret var. ***angustifolium*** (S. Elliott) J. Wipff & S.D. Jones, *comb. nov.*, BASIONYM: *Panicum angustifolium* S. Elliott, *A Sketch of the Botany of South Carolina and Georgia* 1:129. 1816. *Panicum nitidum* J. Lamarck var. *angustifolium* (S. Elliott) A. Gray, *N. Amer. Gram.* 2:112. 1835. *Dichantheium angustifolium* (S. Elliott) F. Gould, *Brittonia* 26:59. 1974. TYPE: UNITED STATES. South Carolina: without locality, *S. Elliott s.n.* (HOLOTYPE: CHARL).

Panicum neuranthum A. Grisebach var. *ramosum* A. Grisebach, *Cat. Pl. Cub.* 232. 1866. *Panicum fusiforme* A. Hitchcock, *Contr. U.S. Natl. Herb.* 12:222. 1909. *Dichantheium aciculare* (N. Desvaux ex J. Poiret) F. Gould & C. A. Clark var. *ramosum* (A. Grisebach) G. Davidse, *Novon* 2:104. 1992. TYPE: CUBA. *Wright 3454* (HOLOTYPE: GOET).

Panicum arenicoloides W. Ashe, *J. Elisha Mitchell Sci. Soc.* 16:89. 1900. *Panicum aciculare* N. Desvaux ex J. Poiret var. *arenicoloides*

(W. Ashe) A. Beetle, *Phytologia* 48:192. 1981. TYPE: UNITED STATES. North Carolina: New Hanover Co., near Wilmington; 7 June 1899; *Ashe s.n.* (Isotype: US).

Gould & Clark (1978) and Allred & Gould (1978) treated *Dichantheium angustifolium* as conspecific with *D. aciculare* without any infraspecific rank. Lelong (1986) recognized *Panicum aciculare* and *P. angustifolium* as distinct species using spikelet length, and leaf blade length and width to separate the two taxa. Davidse & Pohl (1992) stated, "The element of *Dichantheium aciculare* traditionally known as *Panicum fusiforme* A. Hitchc. (Hitchcock & Chase 1910) [= *P. angustifolium*], which has large, acute spikelets with a long-attenuate base, seems modally distinct from the rest of the species, especially in Mesoamericana, although there is some intergradation. This kind of variation is best recognized at the varietal level". Zuloaga *et al.* (1993) also recognized *P. angustifolium* as a variety of *P. aciculare*, using the following varietal name, *P. aciculare* var. *arenicoloides* (W. Ashe) A. Beetle. However an earlier varietal name is available, *P. nitidum* J. Lamarck var. *angustifolium* (S. Elliott) A. Gray.

***Panicum acuminatum* O. Swartz var. *consanguineum* (C. Kunth) J. Wipff & S.D. Jones, *comb. nov.* BASIONYM: *Panicum consanguineum* C. Kunth, *Révís. Gramin.* 1:36. 1829. *Panicum commutatum* J.A. Schultes var. *consanguineum* (C. Kunth) W. Beal, *Grasses N. Amer.* 2:141. 1896. *Panicum villosum* S. Elliott, *A Sketch of the Botany of South Carolina and Georgia* 1:124. 1816, non J. Lamarck (1791). *Dichantheium consanguineum* (C. Kunth) F. Gould & C.A. Clark, *Ann. Missouri Bot. Gard.* 65:1115. 1978. TYPE: UNITED STATES. *Elliott s.n.* (HOLOTYPE: CHARL).**

Panicum ovale S. Elliott, *A Sketch of the Botany of S. Carolina and Georgia* 1:123. 1816. *Dichantheium ovale* (S. Elliott) F. Gould & C.A. Clark, *Ann. Missouri Bot. Gard.* 65:1115. 1978. TYPE: UNITED STATES. Georgia: Camden Co.; St. Mary's; *Baldwin s.n.* (HOLOTYPE: CHARL).

Lelong (1986) stated that, "*P. acuminatum* is probably the most polymorphic and troublesome species in the genus". Gould & Clark (1978) synonymized 46 names under *Dichantheium acuminatum*. Freckmann (1981) attributes the taxonomic difficulties and problems within this group to the reproductive biology of these grasses. Reproduction is amphigamous, but autogamy is the predominant mode of reproduction (Lelong 1965; Spellenberg 1975a). Freckmann (1981) stated, "The autogamous reproduction produces innumerable essentially homozygous local populations or microspecies, some

of which have incorporated translocations or inversions relative to other populations. An exceptional range of variation in such traits has habits, pubescence, and spikelet length is maintained in the complex probably through inbreeding. Sporadic outcrossing introduces new traits into inbred populations leading to new homozygous lines. Spellenberg (1968, 1970, 1975b) synthesized an array of hybrids between populations and between recognized species. He noted that the fertility of the hybrids was generally low and that it tended to be lowest in hybrids between plants widely separated geographically or morphologically, but that successive generations of hybrid derivatives showed increasing fertility. These observations reinforce the views of some workers in this group that natural hybridization is sufficiently extensive to blur distinctions between species or microspecies and to produce a reticulum on intergrading forms between described taxa." This leads to the formation of a very polymorphic species.

Gould & Clark (1978) separated *Dichantheium ovale* from *D. acuminatum* by the presence of a double ligule, but stated that many populations of *D. ovale* closely approach the highly variable *D. acuminatum* in morphological characteristics. They also stated that in the southern range of *D. ovale* the presence of a ligule with a double ring of trichomes is sometimes difficult to determine and the separation of *D. ovale* from *D. acuminatum* var. *villosum* is not always satisfactory. As Hansen & Wunderlin (1988) pointed out, although this character (double ligule) can be quite pronounced at times, it is often difficult to see and actually becomes undetectable on many specimens. Gould & Clark (1978) reported that *D. consanguineum* also appears closely related to *D. ovale* and both have bearded nodes and appressed-strigose or appressed-villous internodes and sheaths. Gould & Clark (1978) separated *D. consanguineum* from *D. ovale* by leaf vestiture. *Dichantheium consanguineum* has blades, at least those from the lower nodes, villous or strongly pilose on both surfaces. Whereas, *D. ovale* has blades pubescent or strigose on the abaxial surface and glabrous on the adaxial surface or with a few long "hairs" near the base. Hansen & Wunderlin (1988) concluded that the pubescence character is insufficient for the separation of these taxa and treated both taxa as conspecific.

Hansen & Wunderlin (1988) treated the southeastern *Dichantheium acuminatum* complex as consisting of three species separated only by spikelet length: *D. leucothrix* (G. Nash) R. Freckmann, *D. acuminatum* with three varieties, and *D. ovale*. Zuloaga *et al.* (1993) recognized the Mesosamerican complex as a single species, *Panicum acuminatum*, with three varieties: var. *acuminatum*, var. *longiligulatum* (including *P. leucothrix* G. Nash) and var. *villosum*, based on spikelet length and plant vestiture. *Panicum ovale* is not reported from Mesoamerica. We agree with the classification given in Zuloaga *et al.* (1993) that this complex is best treated as a single species with varieties.

Panicum dichotomum L. var. *unciphyllum* (C. Trinius) J. Wipff & S.D. Jones, *comb. nov.* BASIONYM: *Panicum unciphyllum* C. Trinius, *Gram. Panic.* 242. 1826. Autonym (*Panicum unciphyllum* var. *unciphyllum*) created by *Panicum unciphyllum* C. Trinius var. *implicatum* (Lamson-Scribner) Lamson-Scribner & E. Merrill, *Rhodora* 3:123. 1901. *Panicum acuminatum* O. Swartz var. *unciphyllum* (C. Trinius) M. Lelong, *Brittonia* 36:269. 1984. *Dichantheium ensifolium* (W. Baldwin ex S. Elliott) F. Gould var. *unciphyllum* (C. Trinius) B.F. Hansen & R. Wunderlin, *Ann. Missouri Bot. Gard.* 75:1647. 1988. *Dichantheium dichotomum* (L.) F. Gould var. *unciphyllum* (C. Trinius) G. Davidse, *Novon* 2:104. 1992. TYPE: UNITED STATES. *Trattinick s.n.* [LECTOTYPE: LE (designated by Hitchcock & Chase 1910)].

Panicum tenue H. Muhlenberg, *Descr. Gram.* 118. 1817. *Dichantheium dichotomum* (L.) F. Gould var. *tenue* (H. Muhlenberg) F. Gould & C.A. Clark, *Ann. Missouri Bot. Gard.* 65:1119. 1978. *Panicum dichotomum* L. var. *tenue* (H. Muhlenberg) C.F. Reed, *Phytologia* 67:453. 1989. TYPE: UNITED STATES. *Muhlenberg 192* (HOLOTYPE: PH-M).

Hansen & Wunderlin (1988) have pointed out that *unciphyllum* is the earliest available varietal name known. Although they include this variety in *Dichantheium ensifolium* (W. Baldwin ex S. Elliott) F. Gould, we agree with Gould & Clark (1978), Davidse & Pohl (1992), and Zuloaga *et al.* (1993) that this taxon is best considered part of *Panicum dichotomum*.

Panicum ensifolium W. Baldwin ex S. Elliott var. *breve* (A. Hitchcock & M.A. Chase) J. Wipff & S.D. Jones, *comb. nov.* BASIONYM: *Panicum breve* A. Hitchcock & M.A. Chase, *Contr. U.S. Natl. Herb.* 15:271. 1910. *Dichantheium dichotomum* (L.) F. Gould var. *breve* (A. Hitchcock & M.A. Chase) F. Gould & C.A. Clark, *Ann. Missouri Bot. Gard.* 65:1120. 1978.; *Panicum chamaelonche* C. Trinius var. *breve* (A. Hitchcock & M.A. Chase) M. Lelong, *Brittonia* 36:267. 1984. *Dichantheium ensifolium* (W. Baldwin ex Elliott) F. Gould var. *breve* (A. Hitchcock & M.A. Chase) B.F. Hansen & R. Wunderlin, *Ann. Missouri Bot. Gard.* 75:1646. 1988. TYPE: UNITED STATES. Florida: Martin Co.; "low pine woods between scrub hills, among palmetto", Jensen, 5 Apr 1906, *A. Hitchcock 734* (HOLOTYPE: US).

Panicum sphaerocarpon S. Elliott var. *isophyllum* (Lamson-Scribner) J. Wipff & S.D. Jones, *comb. nov.* BASIONYM: *Panicum microcarpon* H. Muhlenberg var. *isophyllum* Lamson-Scribner, *Bull. Agric. Exp. Sta. Univ. Tennessee* 7:51, fig. 54. 1894. *Dichantheium sphaerocarpon* (S. Elliott)

F. Gould var. *isophyllum* (Lamson-Scribner) F. Gould & C.A. Clark, Ann. Missouri Bot. Gard. 65:1105. 1978. TYPE: UNITED STATES. Tennessee: Blount Co.; Alleghany Springs, E.E. Gayle, August 1890.

Panicum microcarpon H. Muhlenberg, Desc. Gram. 111. 1817., non H. Muhlenberg ex S. Elliott (1816).

Panicum polyanthes J.A. Schultes, Mantissa 2:257. 1824. *Panicum multiflorum* S. Elliott, A Sketch of the Botany of South Carolina and Georgia 1:122. 1816., non J. Poiret (1816). *Dichantherium sphaerocarpon* (S. Elliott) F. Gould var. *polyanthes* (Schultes) F. Gould, Brittonia 26:60. 1974. TYPE: (Type Fragment: US).

Panicum firmandum Steudel, Syn. Pl. Glum. 1:418. 1855. TYPE: UNITED STATES. North Carolina; M.A. Curtis.

Stipa perplexa (P. Hoge & M. Barkworth) J. Wipff & S.D. Jones, *comb. nov.* BASIONYM: *Achnatherum perplexum* P. Hoge & M. Barkworth, Phytologia 74:11. 1993. TYPE: UNITED STATES. New Mexico: Bernalillo County; 1.5 mi east on USFS road 413, 9 mi south of Tijeres on NM 14; 8 Sept 1985; M.E. Barkworth 4764 (HOLOTYPE: US).

Freitag (1985), Clayton & Renvoize (1986), and Watson & Dallwitz (1992) treated the genus *Achnatherum* P. de Beauvois as a synonym of *Stipa*. Clayton & Renvoize stated that *Stipa* is somewhat variable and whose subdivisions are not sharply defined and seem best treated at the infrageneric level. Until a comprehensive and indepth study has been conducted on all members of *Stipa*, we agree with the above authors that *Achnatherum* is best recognized at an infrageneric level within *Stipa*.

Paspalum repens P. Bergius var. ***fluitans*** (S. Elliott) J. Wipff & S.D. Jones, *comb. et stat. nov.* BASIONYM: *Ceresia fluitans* S. Elliott, A Sketch of the Botany of South Carolina and Georgia 1:109, pl. 6, fig. 4. 1816. *Paspalum fluitans* (S. Elliott) C. Kunth, Rév. Gram. 1:24. 1829. TYPE: UNITED STATES. Georgia: Ogechee.

Hitchcock (1935), Allen (1992), and Pohl & Davidse (1994) recognized *Paspalum fluitans* as being conspecific with *P. repens*. Chase (1951), Gould (1975) and Pohl (1980) recognized *P. fluitans* and *P. repens* as distinct species. Though we agree that these two taxa should be recognized as conspecific, they can be readily distinguished from each other and in our opinion *P. fluitans* should be recognized at the rank of variety. Variety *fluitans* can be distinguished from var. *repens* by the following characters: spikelets (1.2-)1.3-1.4 (-1.6) mm long, pubescent (glabrous); second glume exceeding the upper floret

by 0.1-0.2 mm; upper floret 1.2(-1.3) mm long; and is found in the southeastern United States, Ecuador, and Venezuela. Whereas, var. *repens* has spikelets 1.8-2.0(-2.2) mm long, glabrous to puberulent (sparingly pubescent); second glume exceeding the upper floret by 0.3-0.4(-0.5) mm; upper floret 1.5-1.7 mm long; and is found from southern México to northern Argentina and the West Indies.

Cyperus squarrosus L. var. *runyonii* (H. O'Neill) S.D. Jones & J. Wipff, *comb. nov.* BASIONYM: *Cyperus aristatus* C. Rottbøll var. *runyonii* H. O'Neill, *Rhodora* 44:56-57. 1942. TYPE: UNITED STATES. Texas: Kenedy Co.; *Runyon 1933* (Isotypes: GH,US).

H. O'Neill (1942) stated that var. *runyonii* differs from var. *squarrosus* in the shape of the achene, which is linear-spathulate, 0.2 mm wide throughout, except at the abruptly widened, sub-umbonate apex, which is 0.3 mm wide. Variety *runyonii* also appears to be geographically allopatric with var. *squarrosus*, occurring in southern coastal Texas and northeastern México. Although var. *runyonii* and var. *squarrosus* appear to be geographically allopatric, at least in Texas, the morphological differences between the two taxa are not significant enough to warrant subspecific rank.

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LITERATURE CITED

- Allen, C.M. 1992. *Grasses of Louisiana*, 2nd ed. Cajun Prairie Habitat Preservation Society, Eunice, Louisiana.
- Allred, K.W. & F.W. Gould. 1978. Geographic variation in the *Dichanthium aciculare* complex (Poaceae). *Brittonia* 30:497-504.
- Chase, A. 1951. A revision of A. S. Hitchcock's *Manual of the Grasses of the United States*, 2nd edition. U.S.D.A. Misc. Publ. 200. U.S. Government Printing Office, Washington, D.C.
- Clark, L.G. 1990. A new combination in *Chasmanthium* (Poaceae). *Ann. Missouri Bot. Gard.* 77:601.

- Clayton, W.D. & S.A. Renvoize. 1986. *Genera Graminum: Grasses of the World*. Kew Bull., Addit. Ser. 13. Her Majesty's Stationery Office, London, United Kingdom.
- Davidse, G. & R.W. Pohl. 1992. New taxa and nomenclatural combinations of Mesoamerican grasses (Poaceae). *Novon* 2:81-110.
- Freckmann, R.W. 1981. Realignments in the *Dichantherium acuminatum* complex (Poaceae). *Phytologia* 48:99-110.
- Freitag, H. 1985. The genus *Stipa* (Gramineae) in southwest and south Asia. *Notes Roy. Bot. Gard. Edinburgh* 42:355-489.
- Gould, F.W. & C.A. Clark. 1978. *Dichantherium* (Poaceae) in the United States and Canada. *Ann. Missouri Bot. Gard.* 65:1088-1132.
- Hansen, B.F. & R.P. Wunderlin. 1988. Synopsis of *Dichantherium* in Florida. *Ann. Missouri Bot. Gard.* 75:1637-1657.
- Hitchcock, A.S. 1935. *Manual of the Grasses of the United States*. U.S.D.A. Misc. Publ. 200. U.S. Government Printing Office, Washington, D.C.
- Hitchcock, A.S. & M. A. Chase. 1910. The North American species of *Panicum*. *Contr. U.S. Natl. Herb.* 15:1-396.
- Lelong, M.G. 1965. Studies of reproduction and variation in some *Panicum* subgenus *Dichantherium*. Ph.D. Dissertation. Iowa State University, Ames, Iowa.
- Lelong, M.G. 1986. A taxonomic treatment of the genus *Panicum* (Poaceae) in Mississippi. *Phytologia* 61:251-269.
- O'Neill, H. 1942. The status and distribution of some Cyperaceae in North and South America. *Rhodora* 44:43-64.
- Pohl, R.W. 1980. Gramineae. In: *Flora Costaricensis*, Family #15, ed. W. Burger. *Fieldiana*, Botany No. 4. Field Museum of Natural History, Chicago, Illinois.
- Pohl, R.W. & G. Davidse. 1994. *Paspalum* L. In: *Flora Mesoamericana*, Vol. 6, Alismataceae a Cyperaceae. Eds. G. Davidse, M. Sousa S., & A.O. Chater. Universidad Nacional Autónoma de México, México City, México.
- Spellenberg, R.W. 1968. Biosystematic studies in *Panicum*, group *Lanuginosa*, from the Pacific Northwest. Ph.D. Dissertation. University of Washington, Seattle, Washington.

- Spellenberg, R.W. 1970. *Panicum shastense* (Gramineae), a sterile hybrid between *P. pacificum* and *P. scribnerianum*. *Brittonia* 22:154-162.
- Spellenberg, R.W. 1975a. Autogamy and hybridization as evolutionary mechanisms in *Panicum* subgenus *Dichantherium* (Gramineae). *Brittonia* 27:87-95.
- Spellenberg, R.W. 1975b. Synthetic hybridization and taxonomy of western North American *Dichantherium*, group *Lanuginosa* (Poaceae). *Madroño* 23:134-153.
- Yates, H.O. 1966. Revision of grasses traditionally referred to *Uniola*, II. *Chasmanthium*. *Southw. Naturalist* 11:415-455.
- Watson, L. & M.J. Dallwitz. 1992. *The Grass Genera of the World*. C.A.B. International, Oxon, United Kingdom.
- Zuloaga, F.O., R.P. Ellis, & O. Morrone. 1993. A revision of *Panicum* subg. *Dichantherium* sect. *Dichantherium* (Poaceae: Panicoideae: Paniceae) in Mesoamerica, the West Indies, and South America. *Ann. Missouri Bot. Gard.* 80:119-190.